

Essential Questions: Doorways to Inquiry and Understanding



presented by

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Stage 1 – Desired Results

Established Goal(s):

G

Understanding(s):

Students will understand that...

U

Essential Question(s):

Q

Students will know...

K

Students will be able to...

S

Stage 2 – Assessment Evidence

Performance Task(s):

T

Other Evidence:

OE

Stage 3 – Learning Plan

Learning Activities:

L

Stage 1 – Desired Results

Established Goal(s):

G

- *What relevant goals (e.g., Content Standards, Course or Program Objectives, Learning Outcomes etc.) will this design address?*

Understanding(s):

U

- *What are the “big ideas”?*
- *What specific understandings about them are desired?*
- *What misunderstandings are predictable?*

Essential Question(s):

Q

- *What provocative questions will foster inquiry, understanding, and transfer of learning?*

Students will know...

K

Students will be able to...

S

- *What key knowledge and skills will students acquire as a result of this unit?*
- *What should they eventually be able to do as a result of such knowledge and skill?*

Stage 2 – Assessment Evidence

Performance Task(s):

T

- *Through what authentic performance task(s) will students demonstrate the desired understandings?*
- *By what criteria will “performances of understanding” be judged?*

Other Evidence:

OE

- *Through what other evidence (e.g. quizzes, tests, academic prompts, observations, homework, journals, etc.) will students demonstrate achievement of the desired results?*
- *How will students reflect upon and self-assess their learning?*

Stage 3 – Learning Plan

Learning Activities:

L

- *What learning experiences and instruction will enable students to achieve the desired results? How will the design –*

W= help the students know where the unit is going and what is expected? Help the teacher know where the students are coming from (prior knowledge, interests)?

H = hook all students and hold their interest?

E = equip students, help them experience the key ideas, and explore the issues?

R = provide opportunities to rethink and revise their understandings and work?

E = allow students to evaluate their work and its implications?

T = be tailored (personalized) to the different needs, interests, abilities of learners

O = be organized to maximize initial and sustained engagement as well as effective learning?

Backward Design: Stage 1

Stage 1: Desired Results

- G** Established Goals
- U** Enduring Understandings
- Q** Essential Questions
- K S** Knowledge and Skill

Stage 2: Evidence

Stage 3: Learning Plan

In Stage 1 we consider the desired results of the design according to the following four categories:

1. **Established Goals** – These typically include National, State, Local or Professional Standards; Course or Program Objectives, District Learner Outcomes, etc.
2. **Enduring Understandings** – Stated as full-sentence statements, the Understandings specify what we want students to come to understand about the “big ideas.”
3. **Essential Questions** – These open-ended, provocative questions are designed to guide student inquiry and focus instruction for “uncovering” the important ideas of the content.
4. **Knowledge (K) and Skills (S)** – These are the more discrete objectives that we want students to know and be able to do.

DESIGN STANDARDS for STAGE 1 – *To what extent does the design:*

1. focus on the “big ideas” of targeted content?

Consider: Are...

- the targeted understandings enduring, based on transferable, big ideas at the heart of the discipline and in need of “uncoverage”?
- the targeted understandings framed as specific generalizations?
- the “big ideas” framed by questions that spark meaningful connections, provoke genuine inquiry and deep thought, and encourage transfer?
- appropriate goals (e.g., content standards, curriculum objectives) identified?
- valid and unit-relevant knowledge and skills identified?

Stage 1: Identify Desired Results.

Established Goals:

G

- Standard 6 - Students will understand essential concepts about nutrition and diet.
- 6, a -Students will use an understanding of nutrition to plan appropriate diets for themselves and others.
 - 6, c -Students will understand one's own eating patterns and ways in which these patterns may be improved.

What enduring understandings are desired?

Students will understand that:

U

- A balanced diet contributes to physical and mental health.
- The USDA Food Pyramid presents relative guidelines for nutrition.
- Dietary requirements vary for individuals based on age, activity level, weight, and overall health.
- Healthful living requires an individual to act on available information about good nutrition even if it means breaking comfortable habits.

What essential questions will be considered?

- What is healthful eating?
- Are you a healthful eater? How would you know?
- How could a healthy diet for one person be unhealthy for another?
- Why are there so many health problems caused by poor eating despite all of the available information?

Q

What key knowledge and skills will students acquire as a result of this unit?

Students will know:

K

- key terms - protein, fat, calorie, carbohydrate, cholesterol, etc.
- types of foods in each food group & their nutritional values.
- the USDA Pyramid guidelines.
- variables influencing nutritional needs.
- general health problems caused by poor nutrition.

Students will be able to:

S

- read and interpret nutrition information on food labels.
- analyze diets for nutritional value.
- plan balanced diets for themselves and others.

Stage 1: Identify desired results.

Established Goals:

G

MA Standard 8 - Understanding a Text: Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.

MA Standard 19 - Writing: Students will write with a clear focus, coherent organization and sufficient detail.

MA Standard 20 - Writing: Students will write for different audiences and purposes.

What enduring understandings are desired?

Students will understand that:

U

- Novelists often provide insights about human experience and inner life through fictional means.
- Writers use a variety of stylistic techniques to engage and persuade their readers.
- Holden Caulfield reflects common adolescent experiences but masks deep-seated personal problems about growing up and relating to others.

What essential questions will be considered?

- What is the relationship between fiction and truth? What truths can best be rendered fictionally?
- How do authors hook and hold readers? How does J.D. Salinger engage you?
- How do writers persuade their readers?
- What's wrong with Holden?

Q

What key knowledge and skills will students acquire as a result of this unit?

Students will know:

K

- the plot and characters of *Catcher in the Rye*.
- various stylistic techniques employed by J. D. Salinger.
- the steps in the writing process.
- persuasive writing techniques.

Students will be able to:

S

- apply strategies for interpretive reading.
- develop a well-reasoned hypothesis through a close reading of a text.
- apply the writing process to produce a draft and a revision of a persuasive written product.
- reflect on their comprehension of a text, and consider their own misunderstandings.

Concept Attainment – Essential Questions

Part 1 - Examine the following examples and non-examples to determine the common characteristics of Essential Questions. List these in the box below.

Essential Questions	Not Essential Questions
<ol style="list-style-type: none"> 1. How are "form" and "function" related in biology? 2. How do effective writers hook and hold their readers? 3. Who "wins" and who "loses" when technologies change? 4. Should it be an axiom if it is not obvious? 5. What distinguishes fluent foreigners from native speakers? 6. How would life be different if we couldn't measure time? 	<ol style="list-style-type: none"> 7. How many legs does a spider have? How does an elephant use its trunk? 8. What is "foreshadowing"? Can you find an example of "foreshadowing" in the story? 9. What is the original meaning of the term, technology (from its Greek root, "techne")? 10. By what axioms are we able to prove the Pythagorean theorem? 11. What are some French colloquialisms? 12. How many minutes are in an hour? How many hours are in a day?

List common characteristics of the Essential Questions:

Part 2 - Use your list of characteristics as criteria to determine which of the following are Essential Questions. Check "yes" or "no" after each example.

	YES	NO
13. What is the relationship between popularity and greatness in literature?	—	—
14. When was the Magna Carta signed?	—	—
15. Crustaceans - what's up with that?	—	—
16. Which president of the U. S. has the most disappointing legacy?	—	—
17. What's the pattern?	—	—
18. To what extent are common sense and science related?	—	—

Refine your list of key characteristics of Essential Questions:

Essential Questions

(examples)



Arithmetic (numeration)

- What is a number? Why do we have numbers? What if we didn't have numbers?
- Can everything be quantified?

Arts (visual and performing)

- Where do artists get their ideas?
- How does art reflect, as well as shape, culture?

Culinary Arts

- When is it o.k. to deviate from the recipe?
- What makes a "safe" kitchen?

Dance

- How and what can we communicate through the "language" of dance?
- In what ways can motion evoke emotion?

Economics

- What determines value?
- Can macro-economics inform micro-economics (and vice-versa)?

Foreign Language

- What distinguishes a fluent foreigner from a native speaker?
- What can we learn about our own language and culture from studying another?

Geography

- What makes places unique and different?
- How does where we live influence how we live?

Government

- Who should decide?
- How should we balance the rights of individuals with the common good?

Health

- What is "healthful" living?
- How can a diet be healthy for one person and not another?

Essential Questions



(more examples)

History

- Whose "story" is it? Is history the story told by the "winners"?
- What can we learn from the past?

Literature

- What makes a "great" book?
- Can fiction reveal "truth"? Should a story teach you something?

Mathematics

- When is the "correct" answer not the best solution?
- What are the limits of mathematical representation/modeling?

Music

- How are sounds and silence organized in various musical forms?
- If practice makes perfect, what makes "perfect" practice?

Physical Education/Athletics

- Who is a "winner"?
- Is pain necessary for progress in athletics? ("No pain, no gain" - agree?)

Reading/Language Arts

- What makes a great story?
- How do you read "between the lines"?
- Why do we punctuate? What if we didn't have punctuation marks?

Science

- To what extent are science and common sense related?
- How are "form" and "function" related in biology?

Technology

- In what ways can technology enhance expression/communication?
In what ways might technology hinder it?
- What are the pros and cons of technological progress?

Writing

- Why write?
- How do effective writers hook and hold their readers?
- What is a "complete" thought?

Essential Questions...



have no simple “right” answer - they are meant to be argued.

Essential questions yield inquiry and argument -- a variety of plausible (and arguable) responses, not straightforward facts that end the matter. They serve as doorways into focused yet lively inquiry and research. They should *uncover* rather than cover (up) the subject’s controversies, puzzles, and perspectives. They are intended to result in conclusions drawn by the learner, not recited facts. *Does art reflect culture or help shape it? Can we look but not see? Why do “seers” see what the rest of us don’t? Does the artist see more clearly or look elsewhere?*

are designed to provoke and sustain student inquiry, while also focusing learning and final performance(s).

Essential Questions work best when they are designed and edited to be thought-provoking to students, engaging them in sustained, focused inquiries which culminate in important performance. Such questions often involve the counter-intuitive, the visceral, the whimsical, the controversial, the provocative. *Is the Internet dangerous for kids? Are censorship and democracy compatible? Does food that is good for you have to taste bad? Why write?* Students develop and deepen their understanding of important ideas as they explore these questions.

often address the conceptual or philosophical foundations of a discipline.

Essential questions reflect the most historically important issues, problems and debates in a field of study. *Is history inevitably biased? What is a proof? Nature or nurture?* By examining such questions, students are engaged in thinking like an expert (i.e., “doing” the subject).

raise other important questions.

Thought-provoking essential questions are naturally generative. They lead to other important questions within, and sometimes across, subject boundaries. For example: *In nature, do only the strong survive?* leads to other questions and inquiries into human biology and the physics of physiology. *What do we mean by “strong?”*, *Are insects strong (since they are survivors)?*, *What does it mean to be psychologically strong?*

naturally and appropriately recur.

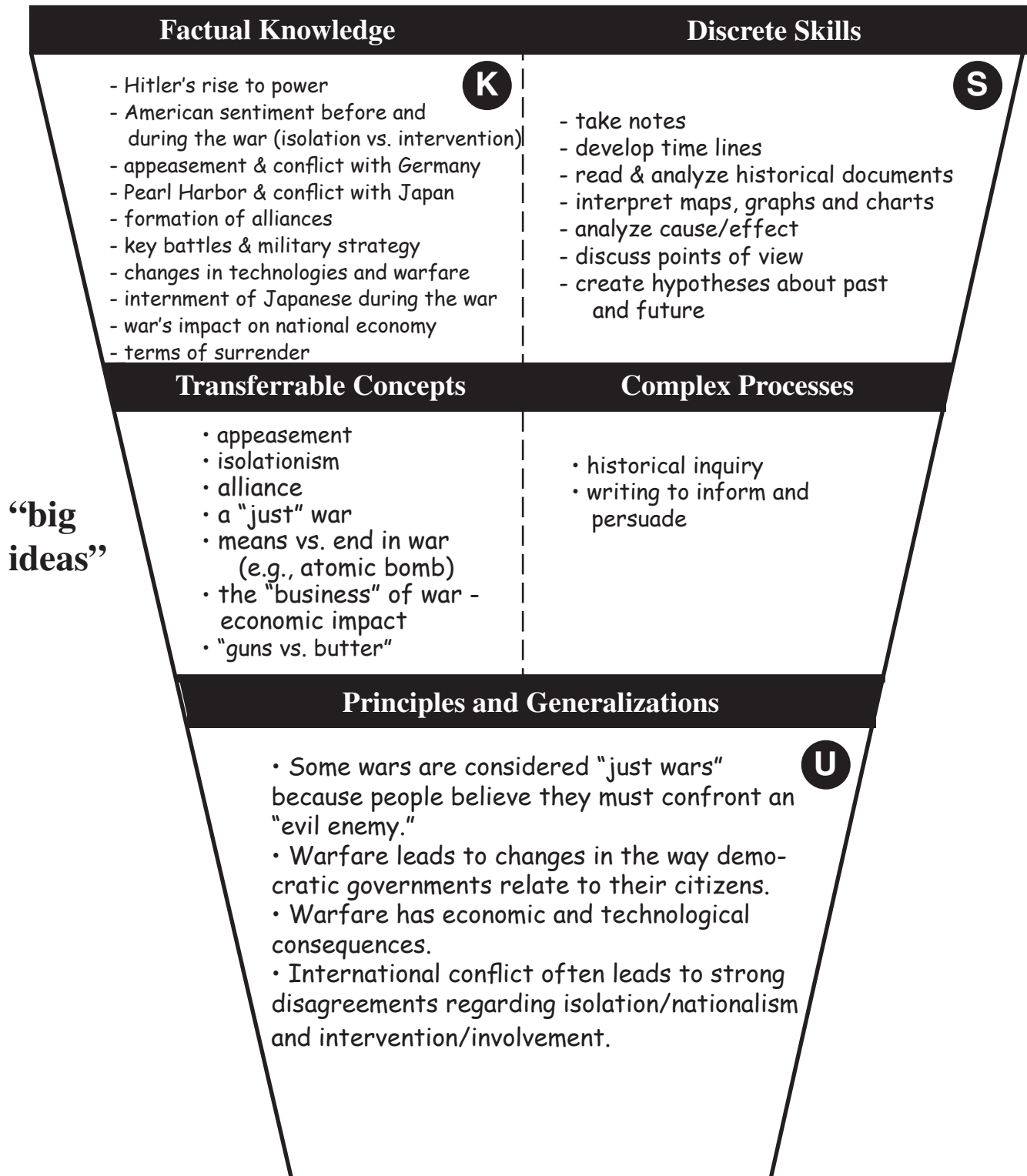
The same important questions get asked and re-asked throughout one’s learning and in the history of the field. For example: *What makes a great book great? Are the Harry Potter novels great books?* can be productively examined and re-examined by first graders as well as college students. Over time, student responses become more sophisticated, nuanced, well-reasoned and supported as their understandings deepen.

Structure of Knowledge

Established

Goal/Topic:

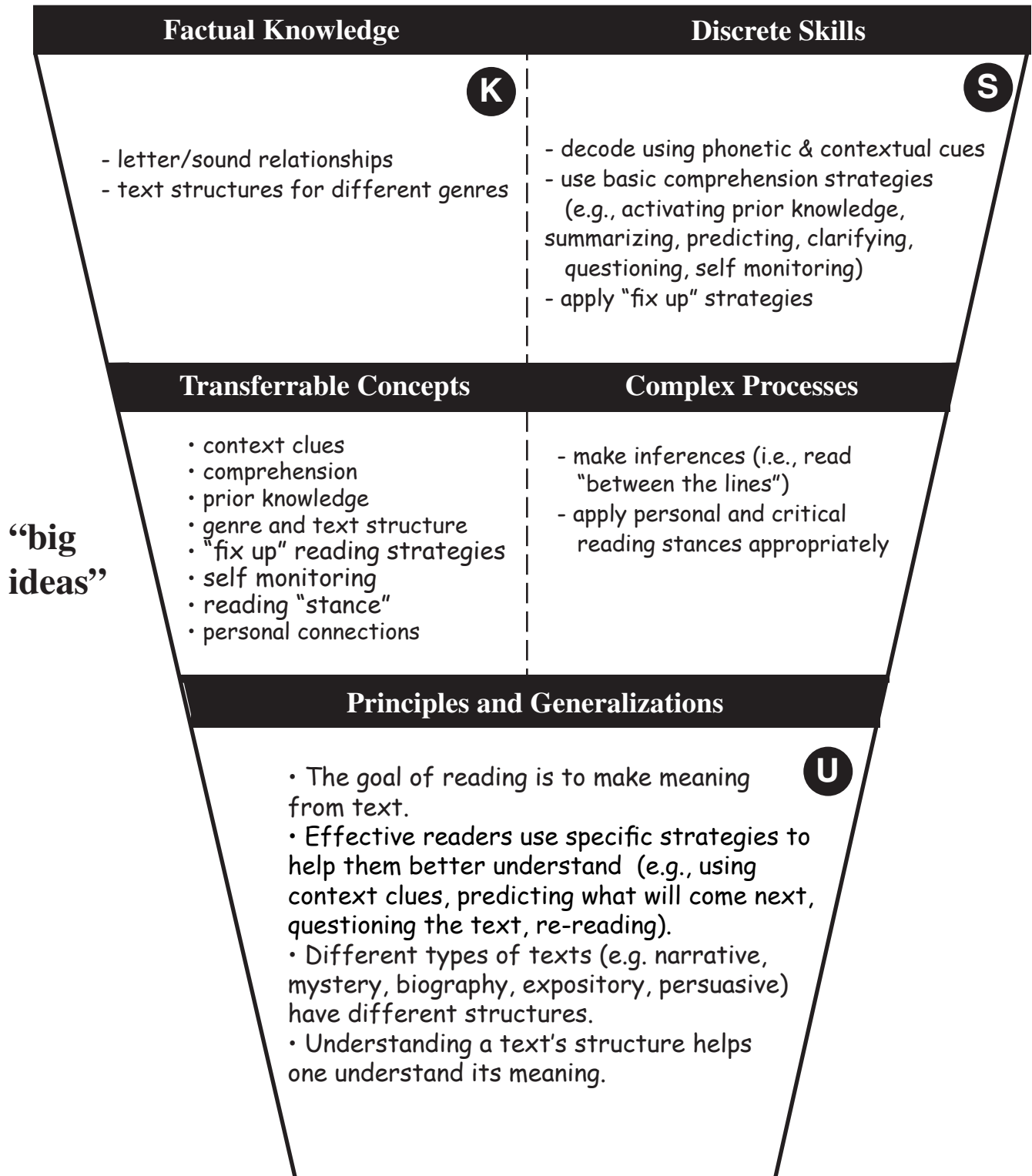
World War II



Structure of Knowledge

Established
Goal/Topic:

reading



“Unpacking” Standards

Established Goals:

G

New Jersey LANGUAGE ARTS Standard 3.3 –

All students will **write** in clear, concise, **organized** language that varies in **content and form** for **different audiences and purposes**.

Stated or implied “big ideas” in the NOUNS and ADJECTIVES:

- content and form +
- audience and purpose +
- organized =
“form follows function”

Stated or implied “real-world performances” in the VERBS:

writing...

- different content and form
- for different audiences and purposes

Understanding(s):

U

Students will understand that...

- Audience and purpose (e.g., inform, entertain, persuade, provoke) influence literary techniques (e.g., organization, style, and word choice).
- Different genres have unique organizational patterns.

Essential Question(s):

Q

- What am I trying to achieve through my writing?
- For whom am I writing?
- How do great writers hook and hold their readers in different genres (e.g., mystery, essay, poem, historical fiction, etc.)?

Performance Task Ideas:

T

- Have students write for the same purpose (e.g., to inform or persuade) to different audiences, and explain the influence of audience on their style, word choice, etc.
- Have students write on the same content for two different genre (e.g., essay, poem, letter to the editor, etc.), and explain each genre's influence on organization, style, word choice, etc.

“Unpacking” Standards

Established Goals:

G

New Jersey MATHEMATICS Standard 4.3

All students will **connect** mathematics to other learning by understanding the interrelationships of mathematical ideas and the roles that mathematics and **mathematical modeling** play in other **disciplines and in life**.

Stated or implied “big ideas” in the NOUNS and ADJECTIVES:

- mathematical modeling in various disciplines and life

Stated or implied “real-world performances” in the VERBS:

- examples of effective mathematical modeling of “real-life” data or phenomena
- critically review a mathematical model for its appropriateness to a given “real-life” situation

Understanding(s):

U

Students will understand that...

- Mathematical models simplify and connect phenomena so that we might better understand them.
- Mathematical models must be viewed critically so that they do not distort or mislead.

Essential Question(s):

Q

- In what ways is mathematical modeling useful?
- How do you know if your model is a good one (for a particular situation)?
- What are the limits of mathematical modeling?

Performance Task Ideas:

T

- Have students create a mathematical model for a selected “real-world” situation (e.g., seasonal temperatures).
- Have students critically review a mathematical model for its appropriateness to a given situation (e.g., the Mercator Projection for representing the globe in 2-dimensions).

Types of Essential Questions – Part 1



Overarching Questions -

These questions point beyond the particulars of a unit to the larger, transferable “big ideas” and enduring understandings. Practically speaking, the specific topics, events, or texts of the unit are typically not mentioned in the framing of overarching questions. For example: *Is science fiction great literature?* is an overarching question for any unit on a specific text such as *Stranger in a Strange Land*.

Topical Questions -

are subject- and topic-specific. Topical questions frame a unit of study. They guide the exploration of “big ideas” and processes within particular subjects. For example: *What aspects of Stranger in a Strange Land are plausible?* guide inquiry within a specific literature unit. This unit question links to the overarching question, *How “true” is a fictional story?* addressed within other English/Language Arts units.

examples

Art

- In what ways does art reflect culture as well as shape it?
- How do artists choose tools, techniques, and materials to express their ideas?

Literature

- What makes a great story?
- How do effective writers hook and hold their readers?

Science

- How does an organism’s structure enable it to survive in its environment?
- How do organisms survive in harsh or changing environments?

Mathematics

- If axioms are like the rules of the game, when should we change the rules?

History/Government

- How do governments balance the rights of individuals with the common good?
- How and why do we provide checks and balances on government power?

unit on masks

- What do masks and their use reveal about the culture? What tools, techniques, and materials are used in creating masks from different cultures?

unit on mysteries

- What is unique about the mystery genre?
- How do great mystery writers hook and hold their readers?

unit on insects

- How do the structure and behavior of insects enable them to survive?
- How do insects survive when their environment changes?

unit on the parallel postulate

- Why is this an axiom if it’s so complex?
- What no longer holds true if we deny it?

unit on the U.S. Constitution

- In what ways does the Constitution attempt to limit abuse of government powers?
- Does separation of powers (3 branches of government) create a deadlock?

Overarching Understandings and Essential Questions for Writing

Enduring Understandings:

1. Audience and purpose (e.g., to inform, persuade, entertain) influence the use of literary techniques (e.g., style, tone, word choice).
2. Writers do not always say what they mean. Indirect forms of expression (e.g., satire, irony) require readers to read between the lines to find the intended meaning.
3. Punctuation marks and grammar rules are like highway signs and traffic signals. They guide readers through the text to help avoid confusion.
4. A writer selects a form based on his purpose.
5. A writer's point of view is influenced by his experience.
6. Conventions of language help readers understand what is being communicated.
7. The purposeful use and non-use of language conventions help readers understand.
8. A writer's word choice and syntax are characteristics of voice which help to personalize text.

Essential Questions:

1. *Why write? What if writing didn't exist? Why share personal experiences in writing?*
2. *How is written language different from spoken language? What makes writing worth reading?*
3. *How do writers express their thoughts and feelings? Where do ideas for writing come from? What makes writing flow?*
4. *How do effective writers hook and hold their readers? What makes writing easy to follow? What is the best beginning? What is the best ending? What is the best order (sequence)? What is a complete thought?*
5. *Why am I writing? For whom? What am I trying to achieve through my writing? Who will read my writing? What will work best for my audience?*
6. *Why does a writer choose the form of writing he/she does?*
7. *What is the relationship between reader and writer?*
8. *How do writers communicate clearly?*
9. *To what extent do conventions of language impact communication?*
10. *What makes writing worth reading?*
11. *Why do we need grammar?*
12. *To what extent is the pen mightier than the sword?*

Source: Delaware Department of Education – ELA Design Team

Framing a Course Using Essential Questions

<u>Biology</u>										
<u>Key Topics</u>										
Essential Questions	The Cell	Heredity	Evolution	Taxonomy	Viruses, Protists, Fungi & Bacteria	Plants	Invertebrates & Vertebrates	Ecology and Interaction	Human Body Systems	Ethics of Biology
What are we made of? What is everything made of? What makes any living thing what it is? What is "alive"?										
How are structure and function related in living things? Why does this creature do this and look like that?										
How are characteristics of living things passed on through generations? What is inherited and how does it happen? What is 'nature' and what is 'nurture'? What's determined and what's an accident? How and in what ways are accidents beneficial?										
What is that creature? How do we know? What's in a name? How should we classify the things around us?										
How do living things obtain and use energy? Coordinate the actions of cells and organs? Move nutrients? Breathe? Manage water, salts, and wastes?										
How much interaction, stress, growth, and change (to individuals and species) is possible, even desirable, biologically?										
What is the evidence for evolution? How much of the controversy is science-based and how much is cultural?										
How do diseases and medicines work? What can biology teach us about human health?										
What analogies have been most helpful in understanding life? How and when do the analogies permit and how and when do they inhibit further understanding?										

Essential Questions in Skill Areas

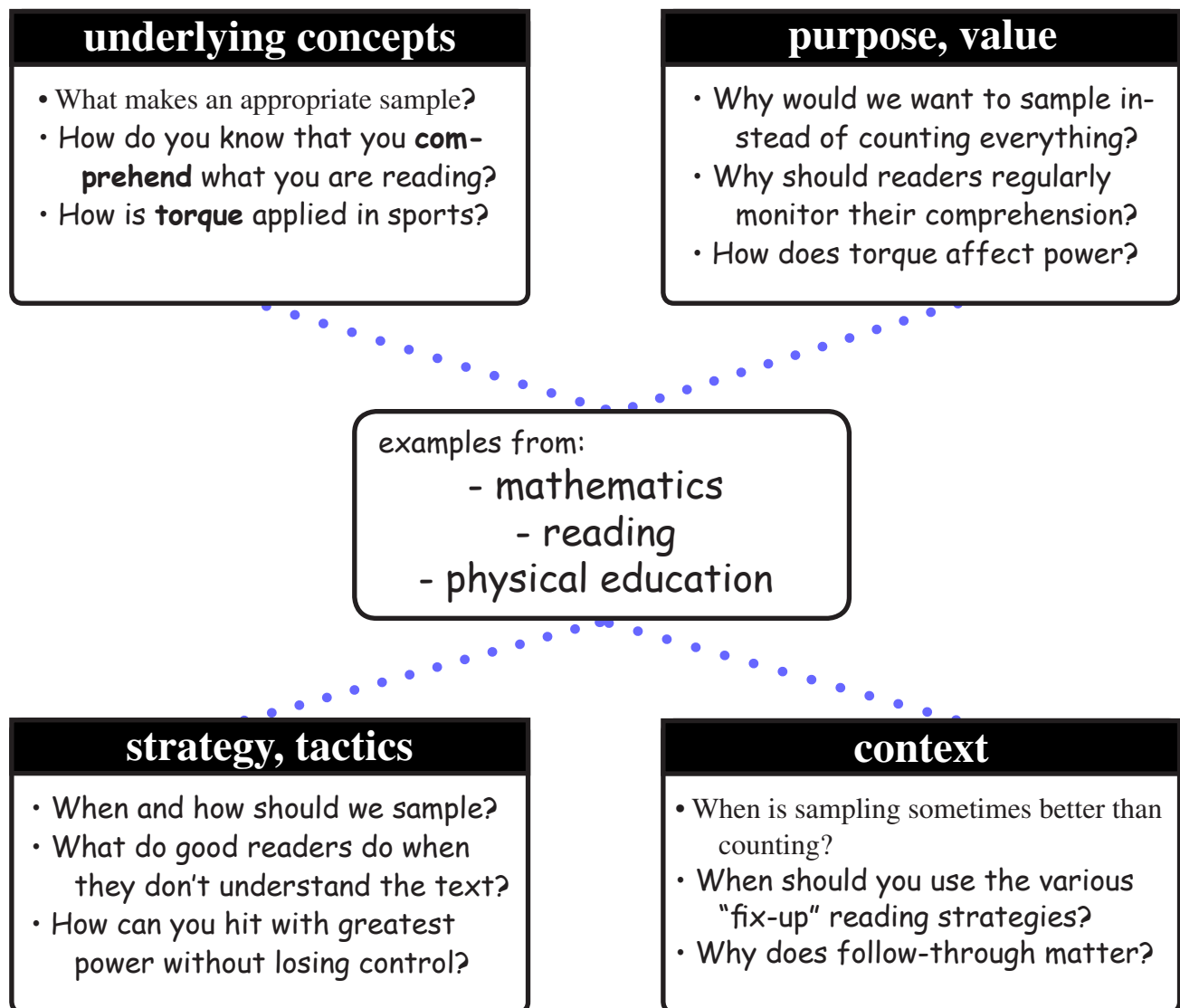


There is a common misunderstanding among many educators that teaching for understanding of “big ideas” are not really central to the teaching of skill-focused areas, such as beginning literacy, physical education, and mathematics. On the contrary: everything we know about learning tells us that that teaching for conceptual understanding is essential to more accurate and efficient skill performance.

Essential questions in skill areas may be considered in terms of the following categories:

- **key concept(s)** – *What are the “big ideas” underlying effective skill performance?*
- **purpose, value** – *Why is the skill important?*
- **strategy, tactics**– *What strategies do skilled performers employ? How can skill performance become more efficient and effective?*
- **context** – *When should you use the skill?*

Use the space below to brainstorm possible essential questions for important skills.



Essential Questions in Skill Areas



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- **context** – *When should you use the skill?*

Use the space below to brainstorm possible essential questions for important skills.

underlying concepts	purpose, value
Skill(s):	
strategy, tactics	context

Tips for Using Essential Questions



1. Organize programs, courses, units of study, and lessons around the questions. Make the “content” answers to questions.
2. Select or design assessment tasks (up front) that are explicitly linked to the questions. The task(s) and performance standards should clarify what acceptable pursuit of, and answers to, the questions actually look like.
3. Use a reasonable number of questions per unit (2-5). Make less be more. Prioritize ‘content’ for students to make the work clearly focus on *a few key* questions.
4. Frame the questions in “kid language” as needed to make them more accessible. Edit the questions to make them as engaging and provocative as possible for the age-group.
5. Ensure that every child understands the questions and sees their value. Conduct a survey or informal check, as necessary, to ensure this.
6. Derive and design specific concrete exploratory activities and inquiries for each question.
7. Sequence the questions so they “naturally” lead from one to another.
8. Post the essential questions in classroom(s), and encourage students to organize notebooks around them to make clear their importance for study and note-taking.
9. Help students to personalize the questions. Have them share examples, personal stories, and hunches. Encourage them to bring in clippings and artifacts to help make the questions come alive.
10. Allot sufficient time for “unpacking” the questions — examining sub-questions and probing implications — mindful of student age, experience, and other instructional obligations. Use question/concept maps to show relatedness of questions.
11. Share your questions with other faculty to make planning and teaching for cross-subject matter coherence more likely. Ideas to promote overarching questions school-wide — ask teachers to post their questions in the faculty room and/or in department meeting/planning areas. Type and circulate questions in the faculty bulletin. Present and discuss at faculty and P.T.S.A. meetings.

Other tips: _____

Title: _____ Subject/Course: _____
Topic: _____ Grade(s): _____ Designer(s): _____

Stage 1 – Desired Results

Established Goal(s)

G

Understanding(s)

Students will understand that...

U

Essential Question(s)

Q